PART - A

HBSU **Dr. Homi Bhabha State University, Mumbai**

Barcode No.1900074067

Do not write/Mark on Bar Code

(Read the Instructions given on the reverse side)
Use Blue / Black Ball Pen only to darken the appropriate circles. Do not fold, tear, wrinkle, staple or use whitener on the cover page of the answer book. Do not write or mark on the barcode and the timing tracks.

CORRECT METHOD ●○○○ WRONG METHOD

Supplement Booklet Information

Supplement Taken	Write the Supplement Barcode No.
Ⓨ Ⓝ	
If Yes, How Many Booklets ①②③④	

Confirm and Sign by Block Supervisor

Signature of Candidate	Candidate Seat Number: 2019230
College Seal and Date: 10 DEC 2019	
Medium of Answer: 1. English ● 2. Marathi ○ 3. Other ○	

PRN	2019001822
Candidate Seat No.	2019230

Q.P.Code	Subject Code (printed on Hallticket)
034102	31031-

Signature & Name of the Block Supervisor with Date	Signature of Chief Coordinator

Exam Date	10 12 2019		
Program Name	MSc-I Biochemistry		
Program Code		Year	Semester
		2019	Sem 1st
Subject Name	cell biology and microbiology		
Subject Code	31031-		

Part - B

Barcode No.1900074067

Do not write/Mark on Bar Code

Exam Date :
Program Code & Name :
Subject Code & Name :
Year / Semester :

If Physically challenged : LD ○ PC ○ VI ○ Regular ○

Question wise marks given by Examiner

Q. No.	Marks	Q. No.	Marks
1		6	
2		7	
3		8	
4		9	
5		10	
		Total	

Name and Signature of Examiner with Date

Question wise marks given by Moderator

Q. No.	Marks	Q. No.	Marks
1		6	
2		7	
3		8	
4		9	
5		10	
		Total	

Name and Signature of Moderator with Date

Sr. No.1900010581

INSTRUCTIONS TO CANDIDATES

1. Candidates should occupy the correct seat and write correct seat number and other details in the space provided for the purpose on the answer-books.
2. Candidates who are not in their seats by the time notified, will not as a rule be permitted to appear for the examination. The Senior Supervisor may at his/her discretion admit those who give him/her a satisfactory reason.
3. Each answer-book contains forty pages. Check whether the pages are properly numbered.
4. Candidates should write their answers in legible handwriting. They are warned that zero marks may be assigned to answers which cannot be assessed by the examiners owing to illegible handwriting.
5. Write on both sides of a page. Rough work where necessary, should be done on the last page in the space provided. No page should be left blank. Any such act shall be treated as unfair means.
6. Do not write anything in the Examiner & Moderator sheet (Part-B) & Re-Evaluator Sheet except Candidate details.
7. Do not damage or make any stray marks on the barcodes.
8. Candidates will not be permitted to leave the examination hall until half an hour after the question paper is distributed.
9. All answer-books supplied shall be returned whether written or blank. Nothing shall be written on the question-paper.
10. No sheet shall be torn from the provided answer-books nor shall additional papers attached to them.
11. Even if it is mentioned in question paper to write each section in separate answer book, if any paper / subject have multiple sections, **the candidate has to write all sections in one and the same answer book.**
12. A warning bell will be given ten minutes before the close of the examination. Candidates will not be allowed to leave the examination hall during the last ten minutes. At the final bell, they must stop writing and be ready to hand over their answer books to the Junior Supervisor. They should not leave their seats until answer-books from all candidates are collected by the Junior Supervisor.

UNFAIR MEANS IN THE EXAMINATIONS

13. **Candidates shall write the answers only with BLUE/BLACK ink Ball pen only. Use of any other Pen like Gel ink or Fountain ink or any other colour ink, will be treated as unfair means in terms of revealing of identity.**
14. Candidates are **forbidden to (i) bring any book, notes, scribbling papers, pages, Mobile phones/smart watches or any other similar devices.** (ii) speak or communicate in any manner to any other candidate, while the examination is in progress, and (iii) take with them any answer-book written or blank while leaving the examination hall. The supervisors/authorized persons are authorized to check the students.
15. A candidate who disobeys any instructions issued by the Senior/ Junior Supervisor or who is guilty or rude or disobedient behavior is liable for disciplinary action to be taken against him / her by the University.
16. Do not fold the answer book anywhere because it will be treated as unfair means in terms of revealing of identity.
17. Candidates suspected to be guilty of any of the aforesaid acts will be allowed to write their paper only after giving an undertaking in writing that the decision of the University in respect of the reported act of unfair means is binding on them/Exchange of writing materials, stencils, mathematical instruments, etc. is strictly prohibited. If candidates want anything, they should approach the Junior Supervisor without disturbing other candidates. However, they should not leave their seats on any account..
18. Any method to bribe the examiner/s by attaching currency notes or letters is strictly prohibited and will result in serious action being taken by the University
19. Seat number should be written only the space provided for the same. Candidate should not write his/her name in any part of the answer-book. **Writing Name, Seat No., Phone/Cell No., putting signature, use of religious invocation or any writing that is not relevant to the answers anywhere in the answer-book will be treated as attempts to reveal identity.**
20. Underlining of answers for focusing attention is permitted. However, use of varied inks, except for illustrations and figures must be avoided. DO NOT use symbol like encircling the question or using colour arrows for P.T.O. These will all be considered as attempt to readily identify the specific answer-book & will be treated as unfair means.

IT IS PRESUMED THAT CANDIDATE HAS READ ALL THE ABOVE INSTRUCTIONS.

Space for Marks	Question No.	START WRITING HERE
	Q1]	Mitochondria :-
		- Mitochondria is a membrane bound organelle present in eukaryotes cells.
		- Mitochondria is also called as power house of cells.
		- impotant role of mitochondria is, provide energy for cells.
		- mitochondria produced ATP for Synthesis of Cells.
		- ~~oxid~~ mitochondria play role in a oxidative phosphorylation.
		- In oxidative phosphorylation, oxidase release energy and Converted into Adenosine tiphosphate.
		- mitochondria ~~Contai~~ Structure Contain 2 types of the membrane outer membrane and inner mitochondrial membrane.
		- outer membrane is caused for Surface of the mitochondria.
		- inner membrane contain the folded like called as cristae.
		- Cristae is folded on a inner membrane is a important thing.
		- mitochondria Contain a genetic ~~mete~~ material Deoxyribose nucleic acid.
		- The mitochondrial Structure Contain intermembrane Space.

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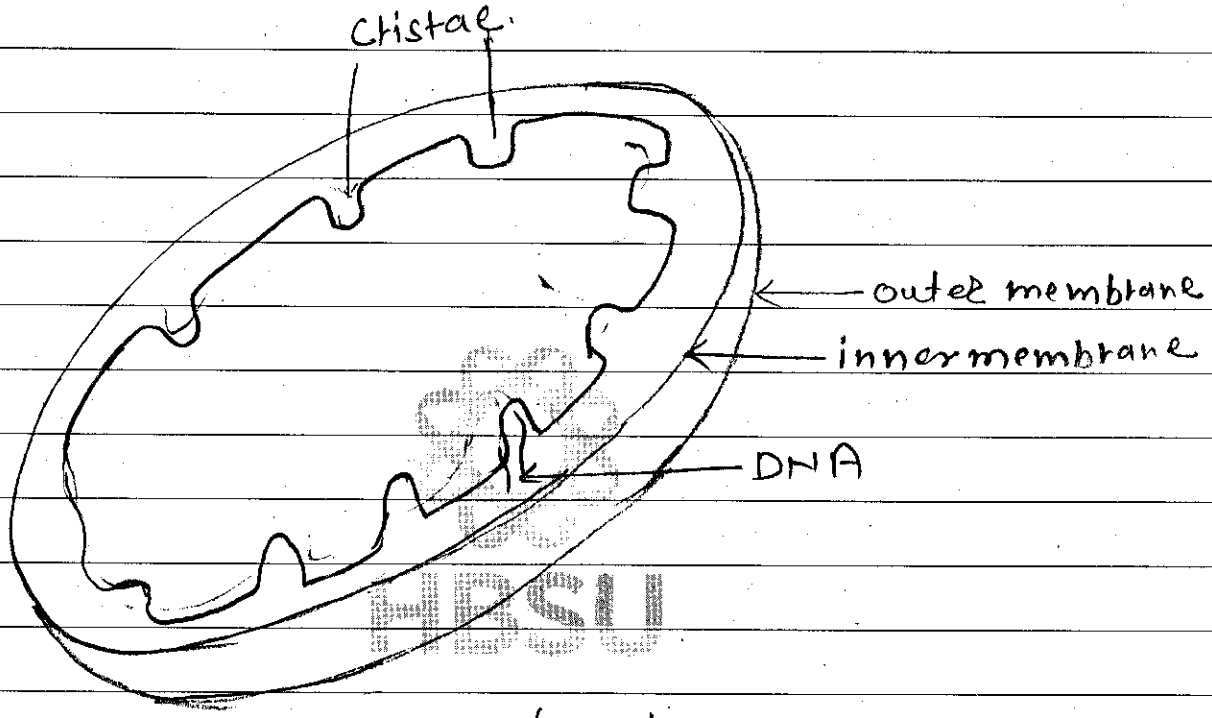
- The intermembrane space inbetween the outer membrane and inner membrane of
- The mitochondria diameter is 2 to 3 nm
- mitochondria contain mitochondrial mathix.



Structure of mitochondria.

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Chloroplast :-

- Chloroplast is a fuel source of world wilde for food and energy source for plants and humans.
- Chloroplast is a singal type of cell organelle present in all eukaryotes cells.
- Chloroplast absent in prokaryotes.
- important function of chloroplast is a photosynthesis.
- in chloroplast dark and light sthoma is present.
- light sthoma is sensitive for the sunlight.
- chloroplast is a disk shaped structure and satellite shape.
- Chloroplast present in almost all eukaryotes cells.
- Chloroplast mostly present heterothophic plant.
- they produce own food material.
- anather function of chloroplast is they produce sugar like glucose, galactose etc. and protein.
- The complex organization in chloroplast is a thylaceoid region.
- The chloroplast contain outer and inner membrane.
- Chloroplast produce protein sugar as well as Chloroplast produced anather food material like oils etc.

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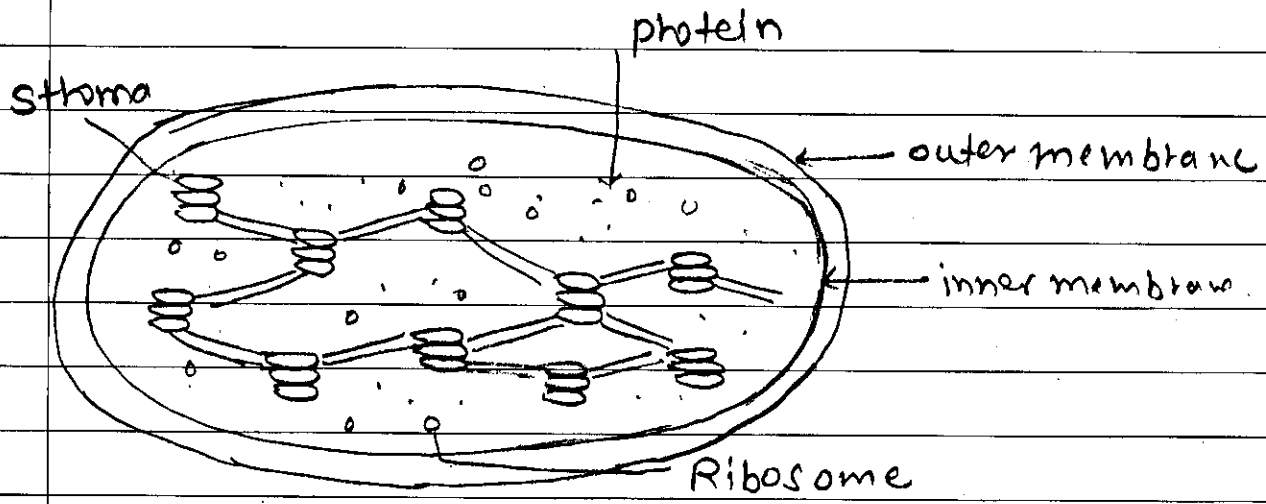

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	Q2	A – membrane transport in bacteria
		– phosphotransferase system is a membrane transport system in bacteria.
		– phosphotransferase system also called as group translocation. or PTS
		– PTS system used for the sugar uptake of baeteria.
		– PTS system is multicomponent system.
		– PTS system also used a active transport.
		– Sugars like glucose, galactose, lactose and Cellubiose are uptake in PTS System.
		– membrane transport in bacteria mechanism are follows.
		– PTS used the PEP ~~phosphotransferase~~ phospho enol pyruvate for these mechanism.
		– The phosphoenol pyruvate a contain phosphate group, these phosphate group transport into the ~~Enzyme~~ histidine rich protein.
		- PTS System Contain enzyme I, enzyme II A enzyme II B and enzyme c, histidine protein etc.
		– histidine rich protein transport the phosphate group to the enzyme I
		– enzyme I received phosphate group to histidine then pass to the enzyme II
		– enzyme II pass phosphate group to the enzyme II A

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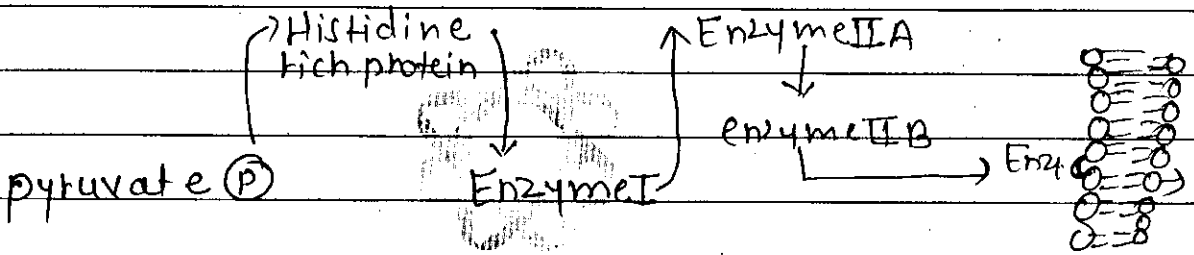
START WRITING HERE

Space for Marks	Question No.

and the enzyme II B

- Then finally e phosphate group transfer into enzyme II c, enzyme II c is ~~et~~ attached to the intermembrane matrix
- Then phosphate group ~~cleaved~~ produced the glucose and then glucose 6-phosphate.
- The phosphotransferase system ~~is~~ its play role for sugar uptake of bacteria.



glucose → glucose 6-phosphate.

START WRITING HERE

Space for Marks	Question No.	
	B	Q2] Ca^{2++} - ATPase pump The cytematic Concentration of Ca^{2+}

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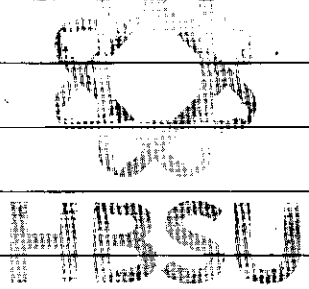
Space for Marks	Question No.	START WRITING HERE
9[3]	A	- Cytoskeleton is actin filaments and tubules
		- Cytoskeleton present in all organelles except nucleus.
		- Cytoskeleton provide structural support, ~~fu~~ structural motility etc.
		- Cytoskeleton have microtubules and micro-filaments types
		- microfilaments ~~tubules~~ are actin filaments. present in all organelle.
		- Because they Contain Actin protein.
		- microtubules are smallest Cytoskeleton types.
		- microtubules are 2-3 nm in diameter.
		- microtubes is rigid, globular. they contain branched or unbranched ~~m~~ filaments.
		- mitotubes provide structural motility.
		- microtubues also found in some bacterial Species

Space for Marks	Question No.	START WRITING HERE

Microfilaments are large ~~in~~ in cytoskeleton.
microfilaments are 7nm.
microfilaments contain two types filaments branched and unbranched.
microfilaments are play role in cilia.
microfilaments present in all protein ~~etc~~ elastin, collagen, keratin lamina.
They microfilaments play role for these protein except lamina.
lamina is play role for the nucleus.
they play role for the nucleus provide support.



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	B	G-protein receptor also called as GPCR G-protein coupled receptor is the largest types of coupled receptor in cell signalling. It consist of 7 signalling helicaes. as soon as attached to the transfer of signals. The thee types of these receptor α, β γ types of the receptor. – G-protein is a largest in cell signalling. – They contain protein like actin, myosin and also present in GPCR. – three receptor α, β, γ present. – 7 signalling helices by G-protein.

Space for Marks	Question No.	START WRITING HERE

Q4] – Bacteriophages is a virus. they affect for the bacterial species.

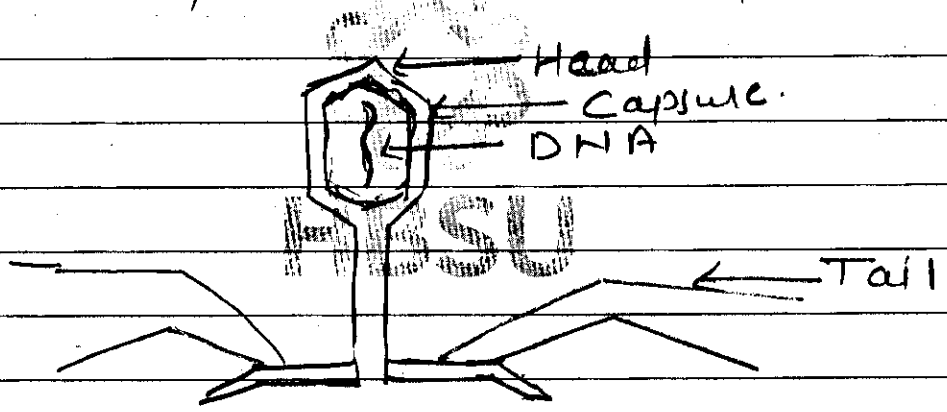
– Bacteriophage also called phage.

– Bacteriophage contain Cylin tetrahedral head and cylindrial tail.

– In tetrahedral head is up present in upper position of phage. and tail is present in lower position.

– The tetrahydral head contain genetic material such as nucleic acid DNA.

– Bacteriophage also contain Capsule.



Bacteriophages ~~ooo~~ proceede in two cycle lysogenic cycle and lytic cycle.
lytic cycle is a direct ~~process~~ type cycle.
lysogenic cycle is indirect type of cycle.
In lysogenic cycle phases are ~~of~~ proceede in five phases.
Absorption, penetration, maturation, synthesis and release.

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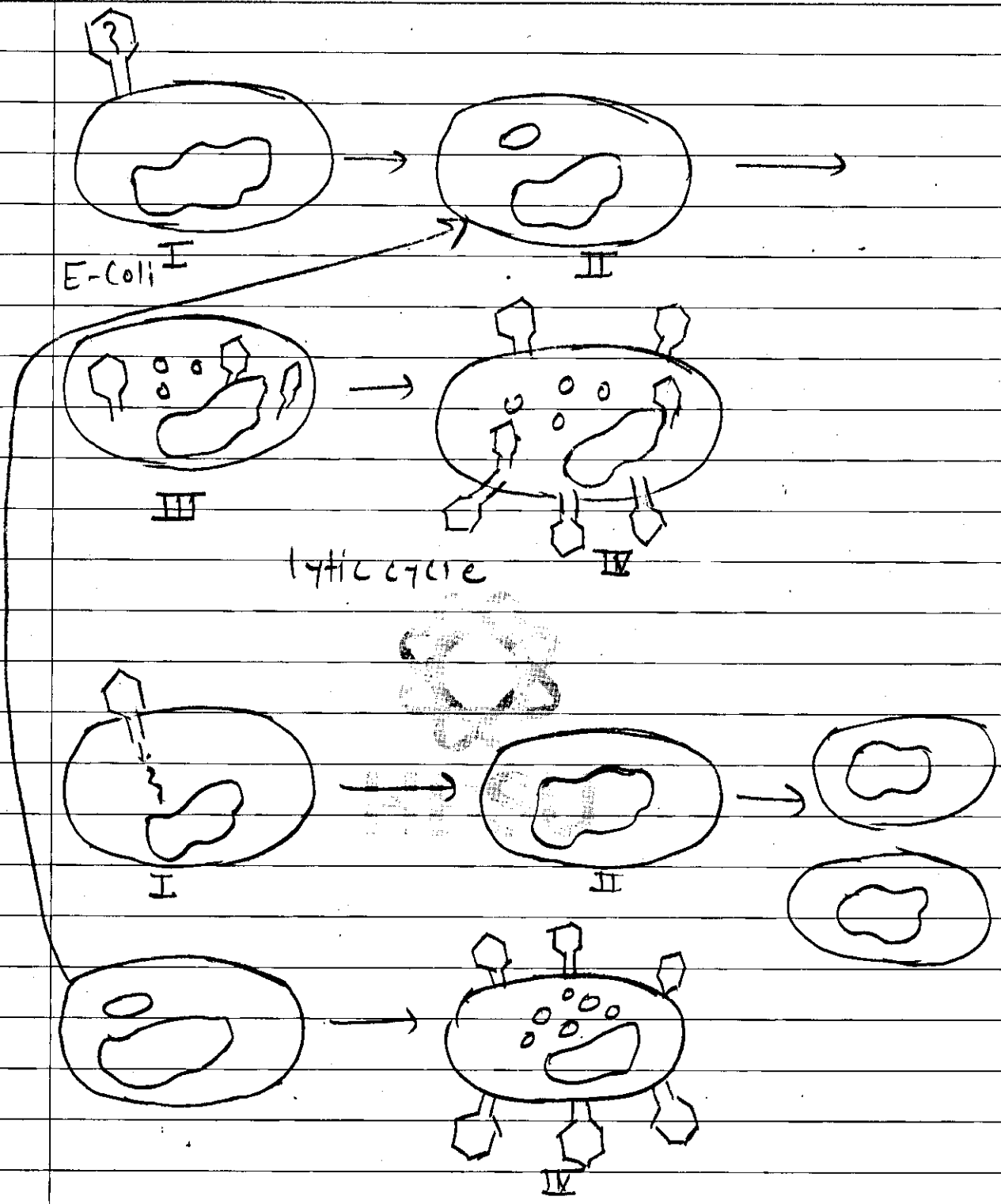

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lytic cycle is direct proceeding cycle.
In lytic cycle 1st bacteriophase attached to surface of bacteria
- Then enter into bacterial cells.
- Bacteriophase contain genetic material is enter into bacterial cell.
- Then bacteriophase separated and DNA Separated.
- DNA is genetical material and genetic material is replicate ~~quw~~ fasth
- The DNA ~~forms~~ i binds to the bacterial cell material like protein are produed there replication, they gives proper environment.
- Then DNA is ~~mold~~ folded into circular shape.
- Called as penetration.
- The DNA produced there world into bacterial cells. they hijack the bacterial cells. and produced no. of ~~bacte~~ own material.
- The DNA is produed genetic material. one DNA produced equally three DNA.
- Then the DNA material is mature and produced Several bacteriophase.
- next the bacteriophases get out into cells. or release into the ⊖ bacterial cells.
- Then again ~~proced~~ enter into surface of bacteria. and produed Seral genetic material.
- these happen in lytic cycle.

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In lysogenic cycle the baeteriophages attached surface of baeteria. and genetic material enter into lysogenic baeteria.
Then ~~these~~ In lytic cycle DNA enter into baeteria they donot attached to the baeteria they ~~pro~~ replicates there own.
In lysogenic cycle DNA enter into baeteria and they attached to the baeteria.
one parent ~~genetic material~~ cell is produced two doughter cells in lysogenic cycle.
and next procedure is same to lytic cycle the parent cell of DNA produced two doughter nucleic they ~~produce~~ folded into ~~th~~ circuler form. and next procedure followed by the lytic cycle.

difference between lytic and lysogenic cycle.

	lytic cycle	lysogenic cycle.
①	lytic cycle is direct way	① ~~In~~ lysogenic cycle is indirect way.
②	lytic cycle DNA does not produced the doughter cells.	② In lysogenic cycle DNA produced two daughter cells.
③	lytic cycle does not enter into lysogenic cycle.	③ lysogenic cycle enter into the lytic cycle.

Space for Marks	Question No.	
	1	lytic cycle proccede Absorption, penetration. materation, Synthesis and release.
	4	lytic take place in. maturation, synthesis and release.

HBSU

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Q5] b. Passive transport :-

Solute concentration is ~~agains~~ lower region to the higher region. called as passive transport.

- passive transport synthesis the ATP
- passive transport is downhill reaction procedure.
- passive transport have two diffusion.

① Simple diffusion :-

In these diffusion extended water can move and lower to upper region.

② facilitate diffusion :-

- In facillitatate diffusion transporter is a permeases.
- Solute concentration is a among the solute concentration there is no energy needed. Concentration is carries for transporter called as facilitate diffusion.

Space for Marks	Question No.	START WRITING HERE

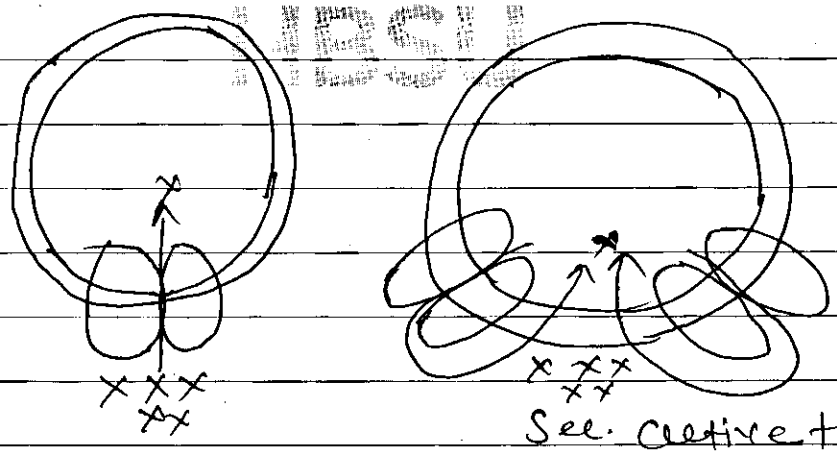
- Solute concentration is against the concentration gradients called as active transport.
- ~~Solute concentra~~ Active transport contain primary active transport and secondary active transport.

In primary active transport, carries exergonic reaction for the transport. And then endergonic reaction.

Eg:- ATP converted into ADP + Pi

in secondary active transport:-

The ions are the close. but they contain solute concentration and high responsible for ion channel open.



See. active transport

primary active transport.

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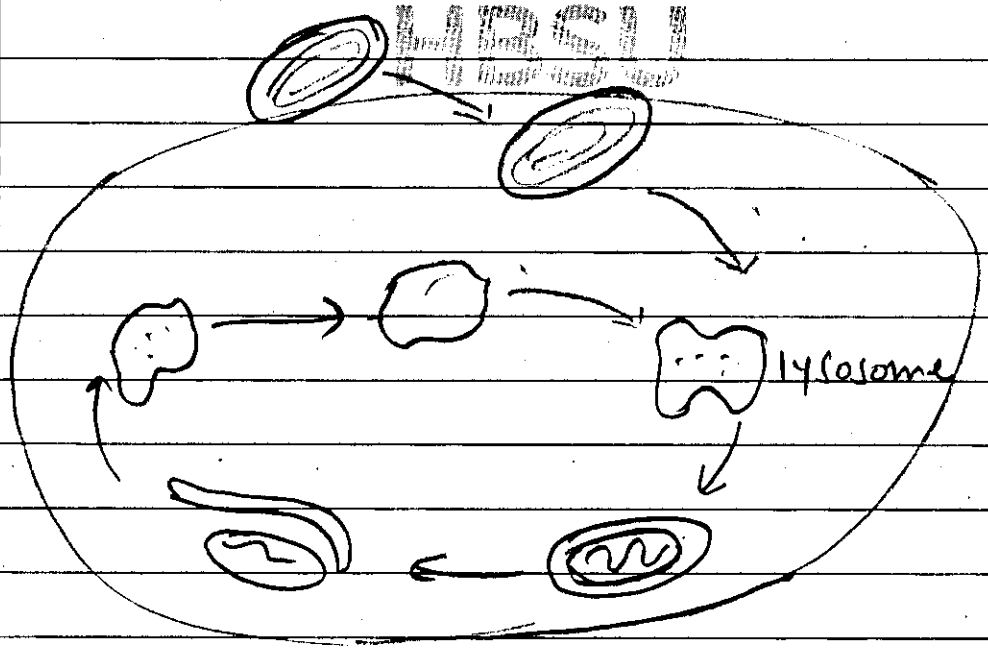
Q1]

- lysosomes are singal types of organelles contain digestive enzyme.
- lysosomes acts on biological protein such as carbohydrates, ~~prot~~, nucleic acid, protein etc.
- lysosomes contain several type of digestive enzyme.
- digestive enzyme stay in lysosomes and provide proper enviroment and ~~prot~~ maintain the PH level.
- lysosomes contain 15 different types of digestive enzyme.
- digestive material ~~produced~~ digest the food material.



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	d]	Antiviral Therapy used for the prevent and Cure the virus HIV.
		- Antiviral therapy also called as antiretroviral therapy.
		- ~~Antiviral~~ HIV is a ~~human deficiency~~ Human immunodeficiency virus.
		- HIV is a serious and dangerous disease.
		- HIV donot cure easily.
		- HIV is a lifelong ~~to~~ Cause disease. So they must required relese the pain.
		- These antiviral therapy gives the relife the pain. for the HIV.
		- HIV caused by infected syringe, Sexual Contact blood donate etc.

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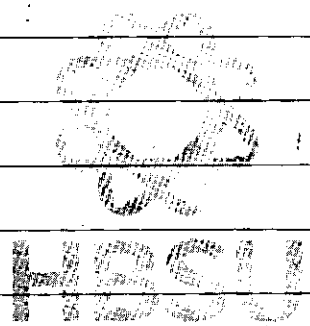

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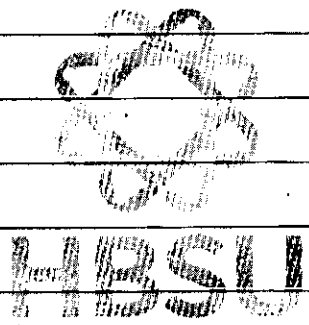

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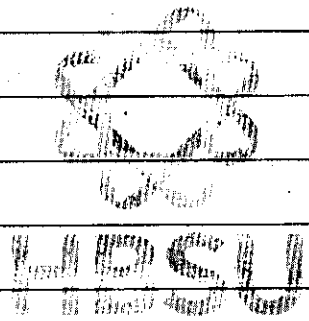

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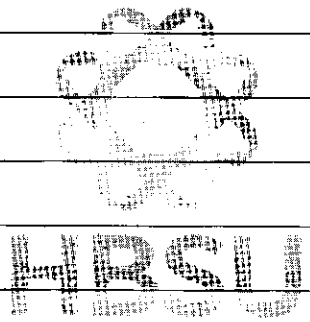

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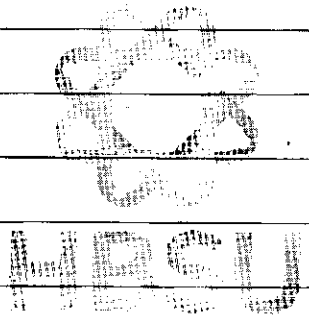

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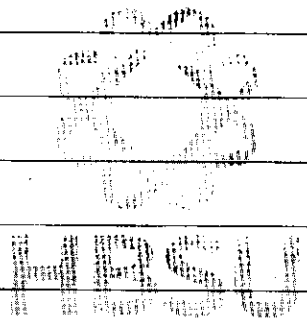

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Rough Work

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Re-Evaluator Sheet

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Exam Date :.....

Program Code & Name :.....

Subject Code & Name :.....

Year / Semester :.....

Questionwise Marks given by Re-Evaluator

Q. No.	Marks	Q. No.	Marks
1		6	
2		7	
3		8	
4		9	
5		10	
		Total	

Name & Signature of Re-Evaluator with Date